Sunkwang Electronics Co.,Ltd.

USER MANUAL

PAN TILT CAMERA SK-D106

Model No.

SK-D106/M290(AI)
SK-D106/M400X(AI)
SK-D106/M400S(AI)
SK-D106/M363(AI)
SK-D106/M363X(AI)
SK-D106/M410(AI)
SK-D106/M410X(AI)
SK-D106/M503(AI)
SK-D106/1004
SK-D106/1043(AI)

Please read this user manual thoroughly and keep it for future reference.
All specification is subject to change without notice to improve quality.

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PRODUCT OUTLINE AND FEATURES

1.Product Outline

This camera can be moved by simple special controller or DVR to up and down, left and right.

2. Features

1) Simple and compact size
2) Fast speed (Panning Max. 93 degree per sec.)
3) 64 PRESET, Staying time in each position can be selected
4) Remote control available (by RS-485 controller)
5) Compatible with various DVRs (Protocol supplied)
6) Simple remote control available (option)

WARNING AND CAUTIONS

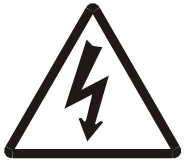
Please carefully check these particulars for the safe use.

Examples of sign

WARNING	This symbol indicates the cause of death or serious injury to the user.
CAUTION	This symbol indicates the cause of equipment damage.

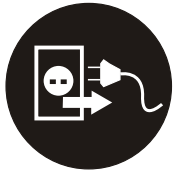
If the product is to be put out of operation definitively, take it to a local recycling plant for a disposal which is not harmful to the environment.

Examples of sign



This symbol indicates the warning of electric shock.

This symbol indicateds the prohibition of disassembly.

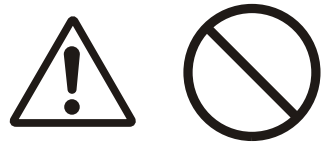


This symbol indicates to observe plug off.

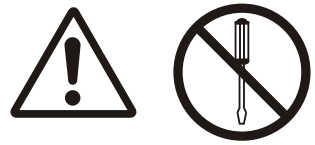
WARNING

Install the product on firm and durable position.

Use a recommended adaptor by the manual.



Do not disassemble, remodel the product.



Unplug the unit when there is any sign of electric leakage, short circle or smog by burn.

⚠ CAUTION

This product should be installed by expert installer.

Do not install the product at the position exposed to the direct sun light.

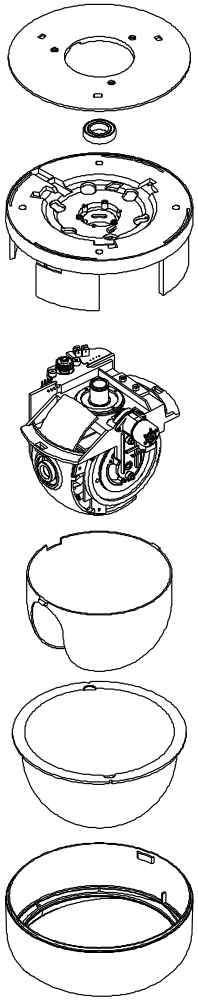
Do not install the prcduct where lighting is unstable.

Do not drop, hit strongly nor vibrate the product.

This Product is produced only for the power DC 12V 1A, it could be caused trobles if adjusted the non-standardized power supplies.

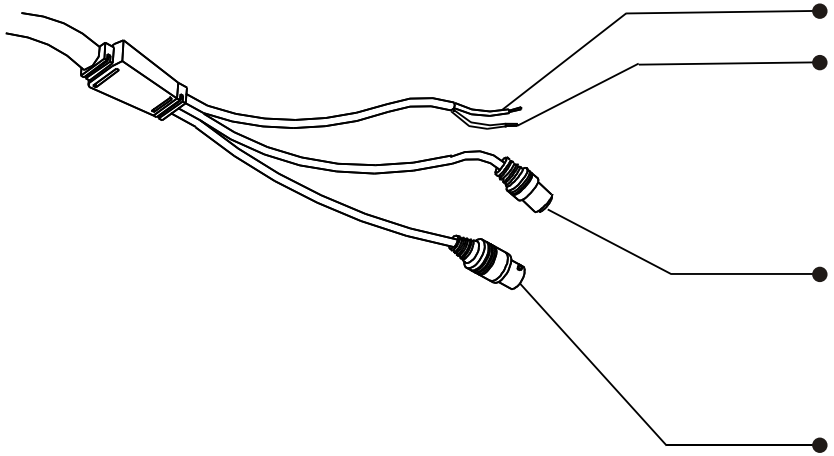
Unplug it when any inflammable or conductive material goes into the product.

DESIGNATION AND FUNCTION 1



- MOUNTING BRACKET
- CAMERA BASE
- CAMERA & P/T MODULE
- SHIELD DOME
- DOME COVER
- CAMERA COVER

·Cable



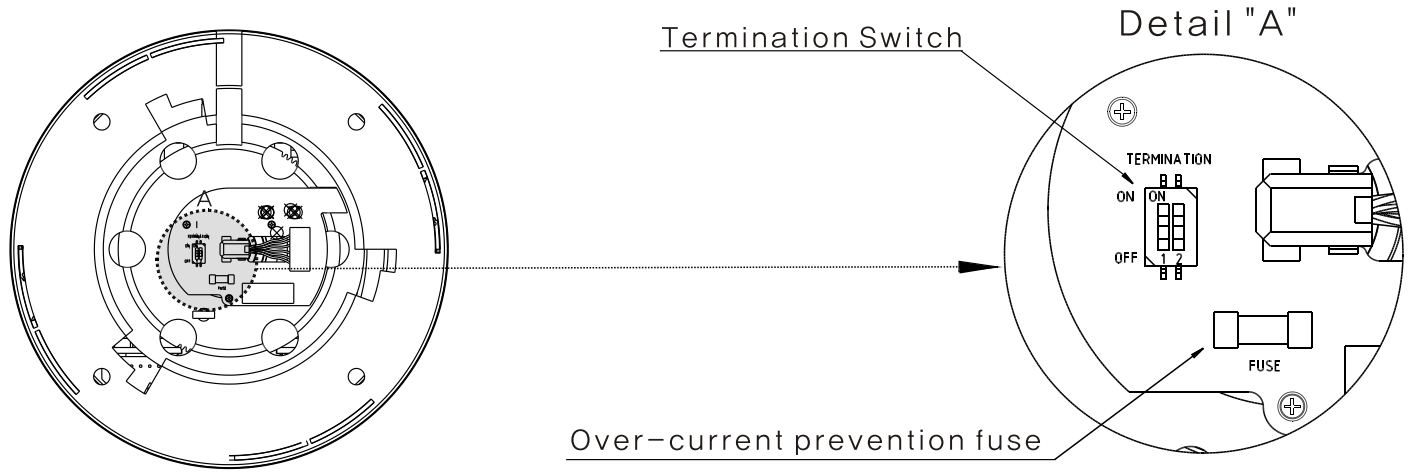
SIGNAL(RS485)
RS485 A (Red)
RS485 B (White)
: Connect with remote control or DVR

Power Input
: input only DC 12V, 1A.

Video Output
: Connect with Monitor

DESIGNATION AND FUNCTION 2

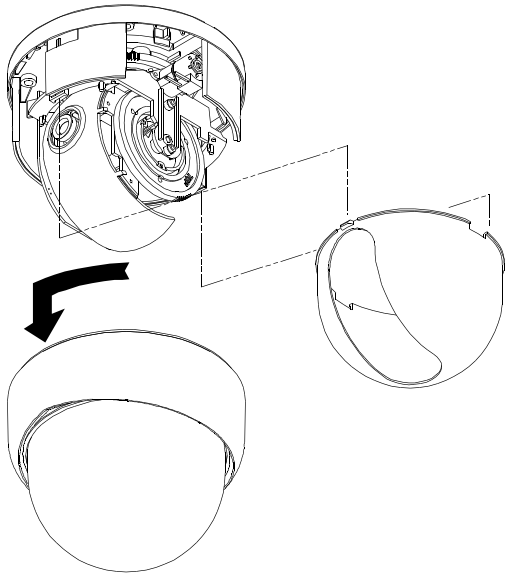
1. Termination Switch : Used for RS-485 communication
   ON - Apply to terminal unit when communicated with PC or remote control in 1:1 or in multi-communication.
   OFF - Apply to all the cameras except terminal unit in multi-communication.
2. Over-current prevention fuse : When over-current occurs, it cut the power to avoid an accident.



DESIGNATION AND FUNCTION 2

DESIGNATION AND FUNCTION 3

1. ID setup
   - Use it when you use many cameras or if you want to use special camera ID.
   - You can set up Max. 255 units.
     (Please refer to the table for camera ID setup at page11)
   - Optional remote control can control upto 99pcs of camera.



Rotate the camera cover ccw and
separate it from pan / tilt assembly.

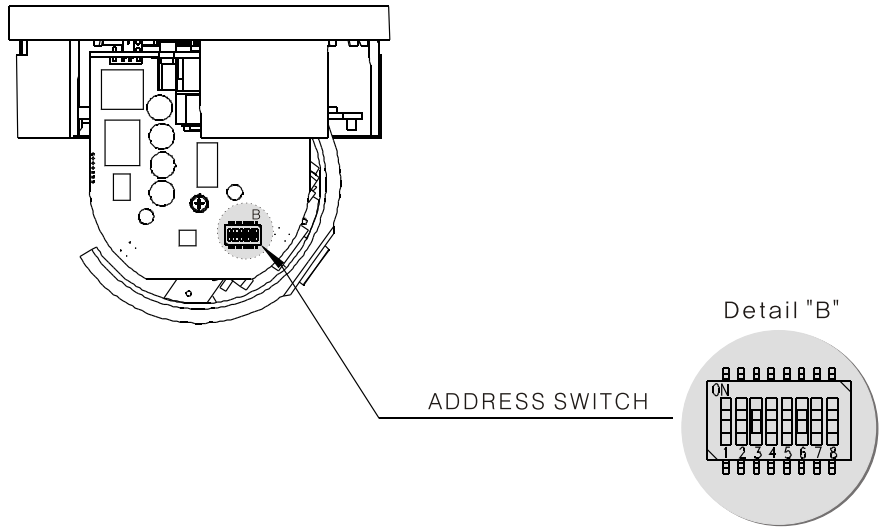


TABLE FOR CAMERA ID

Camera ID	Sw1	Sw2	Sw3	Sw4	Sw5	Sw6	Sw7	Sw8
1	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
2	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF
3	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
4	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF
5	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF
6	OFF	ON	ON	OFF	OFF	OFF	OFF	OFF
7	ON	ON	ON	OFF	OFF	OFF	OFF	OFF
8	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF
9	ON	OFF	OFF	ON	OFF	OFF	OFF	OFF
10	OFF	ON	OFF	ON	OFF	OFF	OFF	OFF
11	ON	ON	OFF	ON	OFF	OFF	OFF	OFF
12	OFF	OFF	ON	ON	OFF	OFF	OFF	OFF
13	ON	OFF	ON	ON	OFF	OFF	OFF	OFF
14	OFF	ON	ON	ON	OFF	OFF	OFF	OFF
15	ON	ON	ON	ON	OFF	OFF	OFF	OFF
16	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF
17	ON	OFF	OFF	OFF	ON	OFF	OFF	OFF
18	OFF	ON	OFF	OFF	ON	OFF	OFF	OFF
19	ON	ON	OFF	OFF	ON	OFF	OFF	OFF
20	OFF	OFF	ON	OFF	ON	OFF	OFF	OFF

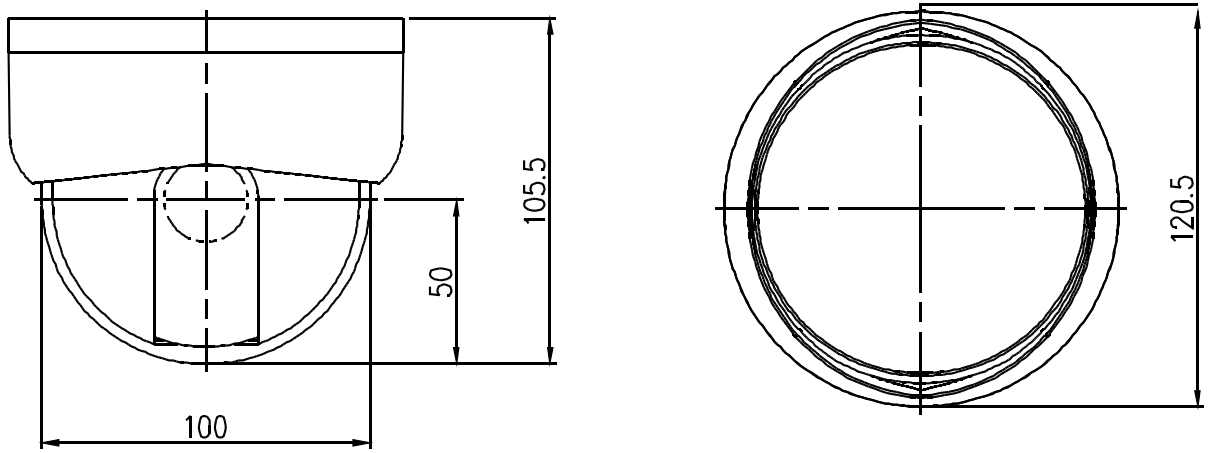
21	ON	OFF	ON	OFF	ON	OFF	OFF	OFF
22	OFF	ON	ON	OFF	ON	OFF	OFF	OFF
23	ON	ON	ON	OFF	ON	OFF	OFF	OFF
24	OFF	OFF	OFF	ON	ON	OFF	OFF	OFF
25	ON	OFF	OFF	ON	ON	OFF	OFF	OFF
26	OFF	ON	OFF	ON	ON	OFF	OFF	OFF
27	ON	ON	OFF	ON	ON	OFF	OFF	OFF
28	OFF	OFF	ON	ON	ON	OFF	OFF	OFF
29	ON	OFF	ON	ON	ON	OFF	OFF	OFF
30	OFF	ON	ON	ON	ON	OFF	OFF	OFF
31	ON	ON	ON	ON	ON	OFF	OFF	OFF
32	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF
33	ON	OFF	OFF	OFF	OFF	ON	OFF	OFF
34	OFF	ON	OFF	OFF	OFF	ON	OFF	OFF
35	ON	ON	OFF	OFF	OFF	ON	OFF	OFF
36	OFF	OFF	ON	OFF	OFF	ON	OFF	OFF
37	ON	OFF	ON	OFF	OFF	ON	OFF	OFF
38	OFF	ON	ON	OFF	OFF	ON	OFF	OFF
39	ON	ON	ON	OFF	OFF	ON	OFF	OFF
40	OFF	OFF	OFF	ON	OFF	ON	OFF	OFF
41	ON	OFF	OFF	ON	OFF	ON	OFF	OFF
42	OFF	ON	OFF	ON	OFF	ON	OFF	OFF
43	ON	ON	OFF	ON	OFF	ON	OFF	OFF

44	OFF	OFF	ON	ON	OFF	ON	OFF	OFF
45	ON	OFF	ON	ON	OFF	ON	OFF	OFF
46	OFF	ON	ON	ON	OFF	ON	OFF	OFF
47	ON	ON	ON	ON	OFF	ON	OFF	OFF
48	OFF	OFF	OFF	OFF	ON	ON	OFF	OFF
49	ON	OFF	OFF	OFF	ON	ON	OFF	OFF
50	OFF	ON	OFF	OFF	ON	ON	OFF	OFF
51	ON	ON	OFF	OFF	ON	ON	OFF	OFF
52	OFF	OFF	ON	OFF	ON	ON	OFF	OFF
53	ON	OFF	ON	OFF	ON	ON	OFF	OFF
54	OFF	ON	ON	OFF	ON	ON	OFF	OFF
55	ON	ON	ON	OFF	ON	ON	OFF	OFF
56	OFF	OFF	OFF	ON	ON	ON	OFF	OFF
57	ON	OFF	OFF	ON	ON	ON	OFF	OFF
58	OFF	ON	OFF	ON	ON	ON	OFF	OFF
59	ON	ON	OFF	ON	ON	ON	OFF	OFF
60	OFF	OFF	ON	ON	ON	ON	OFF	OFF
61	ON	OFF	ON	ON	ON	ON	OFF	OFF
62	OFF	ON	ON	ON	ON	ON	OFF	OFF
63	ON	ON	ON	ON	ON	ON	OFF	OFF
64	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF

·The rest is omitted.

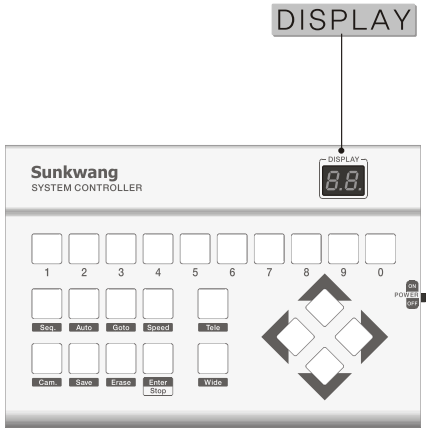
SPECIFICATION AND DIMENSION

- Model No: SK-D106
- Power: DC 12V
- Current Consumption: Max. 500mA
- Operation temp: -10 ~ 50℃
- Preservation temp: -20 ~ 60℃
- Dimension: Ø120 x 106
- Weight: approx. 350g
- Remote control: RS-485
- Data transmission speed : 9600bps
- Camera ID setup: 1~255
- Moving angle- PAN: 0°~ 350° Tilt: 5°~ 90°
- Moving speed- PAN: 9°/s~93°/s Tilt: 9°/s ~ 93°/s
  Shifting speed between Preset positions
  Max.130°/per sec
- Max. Position Memory : 64 Points
- Formula for position operating:
  1. Auto Pan. (approx. 20°/s)
  2. Sequential Pan.
  3. Random Pan.
- Option: Small sized remote control



CONTROLLER

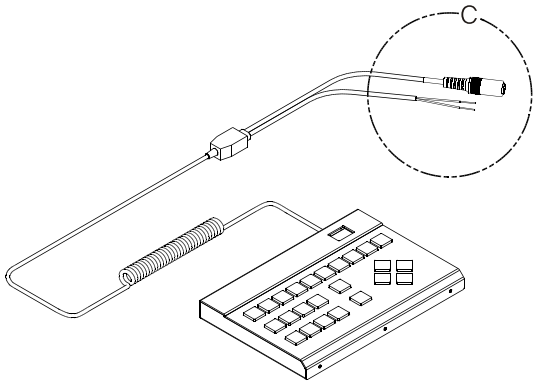
* The controller is a device for controlling the connected cameras, it can control Max. 99 units of camera.

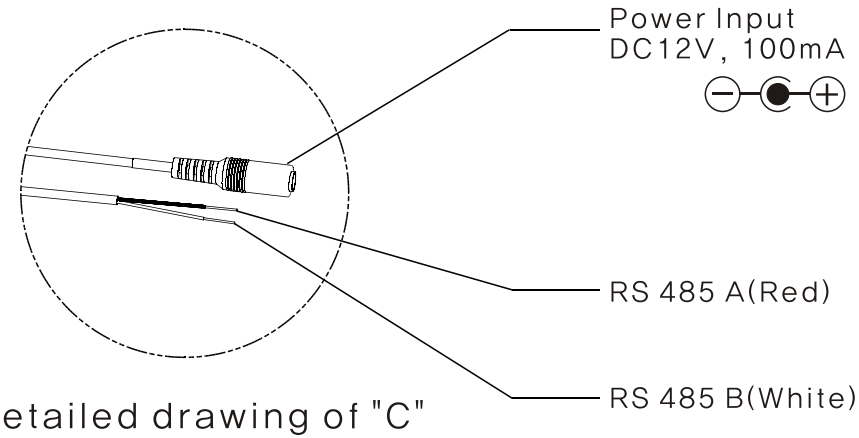


1. Turn on the power switch on the right side of the controller.
2. First "0" is shown on the display.
3. Choose camera ID 1~99 as below.

   Cam.(CA) + camera number + Enter
4. You can move the camera to the direction you want to watch.

CABLE CONNECTIONS FOR CONTROLLER





Detailed drawing of "C"

Connect the communication connectors, RS-485 A,B with A,B connectors of the dome camera.
After connecting cables, please isolate two cables.

FUNCTION SETUP

1. Position Initializing

Use it when initialization of camera is need by external impact or other reasons.

In this case, memorized positions are not erased.

Cam.(CA) + Cam.(In) + Enter

(Initializing time : About 16 seconds)

2. Speed Control

There are 10 steps of speed. Button 1 on the left is slowest and button 0 on the right is fastest. You can select the speed as below.

1) Select the camera. (Refer to page15)

2) Press below buttons to setup the speed ("Enter" button is not needed)

Speed(SP) + Selected speed(1~0) Reference) F1, F2.....F0(Fastest)

*** REFERENCE) Max. speed table per every step.**

Step	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
Speed(°/sec)	9	15	20	30	40	50	58	66	78	93

3. Position Memorizing

Positions can be memorized up to 64 points (1~64).

1) Place the camera to the position you want.

2) After placing, press the buttons as below.

SAVE(SA) + POSITION NO + Enter

4. Position Cancelation

The memorized positions can be canceled as below.

1) ERASE(Er) + POSITION NO + Enter : Erasing one position

2) ERASE(Er) + ERASE(EA) + Enter : Erasing all the memorized positions

5. Moving to memorized positions.

You can move the camera to the memorized positions as below.

1) Goto(GO) + POSITION NO + Enter

6. Sequential Pan

You can move the camera to the memorized positions one by one.

*Save more than two positions before using this function.

1) Seq(SQ) + Enter : Staying for 5 seconds in each position.

2) Seq(SQ) + staying time(sec) + Enter : Staying for 5 seconds or longer by time setting.

*The staying time is 5 seconds basically, and it will be stayed for longer time(5+0 ~ 5+99sec) at the memorized position.

* Press ENTER button to stop sequential panning.

7. Random Pan

You can move the camera to the memorized positions randomly.

1) Seq(SQ) + Seq(rA) + Enter : Staying for 5 seconds

2) Seq(SQ) + Seq(rA) + staying time (sec) + Enter : Staying for 5 seconds or longer by time setting

* Save more than three positions before using this function.

* Press ENTER button to stop sequential panning.

8. Auto Pan

You can make the camera panning automatically at the fixed speed.

1) Auto(AP) + Enter : 0˚~ 350˚

2) Auto(AP) + POSITION NO + Auto(to) + POSITION NO + Enter

:From one position to the other position.

* Save more than two positions to use Auto Pan(2) function.
* Press ENTER button to stop sequential panning.
* The Auto Panning speed is fixed at about 8°/ seconds. If you want faster panning, you can use sequential panning after setting up two positions.

9. Digital Zoom {SK-M290(AI), SK-M400X(AI), SK-M400S(AI) only}

{SK-M290(AI),SK-M400X(AI),SK-M400S(AI) } supports digital zoom(X3)

1) Tele : digital zoom in.

2) Wide : digital zoom out.

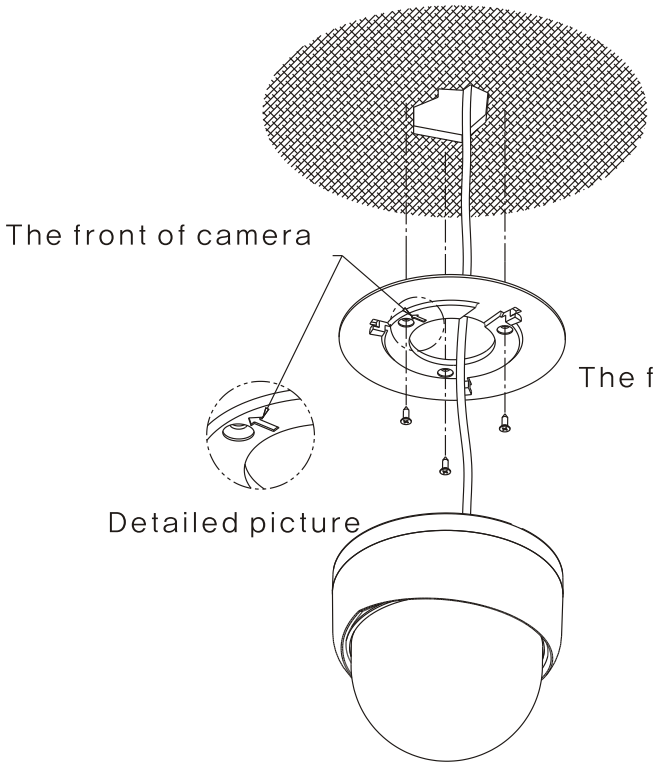
10. Enter

Used to stop Auto Pan, Random Pan and Sequential Pan or to stop camera movement.

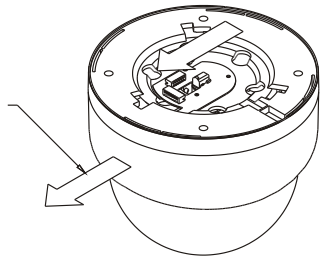
And to make functions working with other buttons.

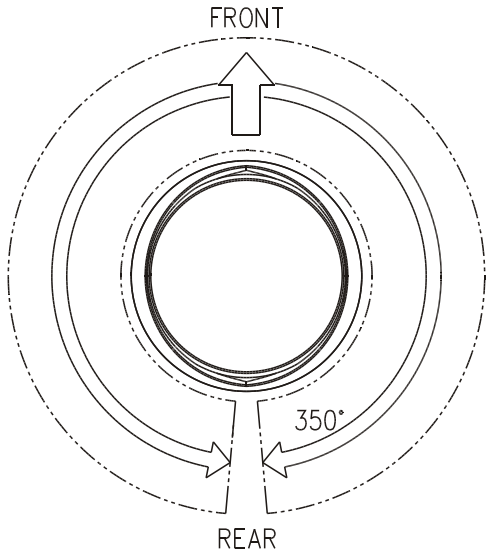
When used alone, it stops all the functions and make it ready.

CAMERA INSTALLATION



Look out for the direction of installation

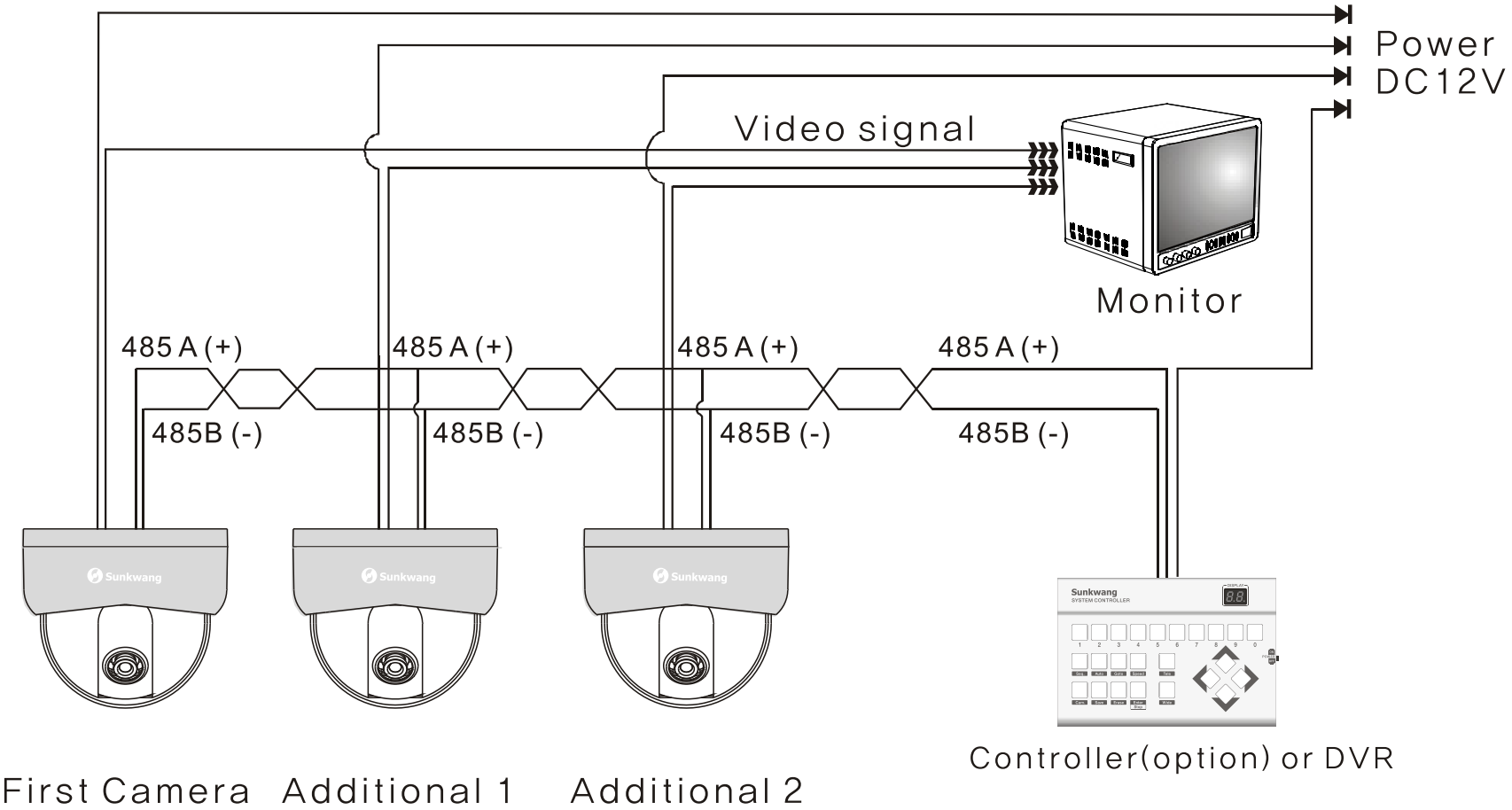




observable range

- You should install the camera for the first time considering the front direction. It is better to install the camera to the direction of main surveillance.

CABLE CONNECTION



SPECIFICATIONS

Model No.
SK-D106/M290(AI)
SK-D106/M400X(AI)
SK-D106/M400S(AI)
SK-D106/M363(AI)
SK-D106/M363X(AI)
SK-D106/M410(AI)
SK-D106/M410X(AI)
SK-D106/M503(AI)
SK-D106/1004
SK-D106/1043(AI)

SK-D106/M290(AI)

Mode No	SK-D106/M290(AI)
Type	Digital zoom color PT dome camera
Image sensor	1/3"COLOR SONY SUPER HAD CCD
Effective pixel	768(H) X 494(V) Pixels(NTSC), 752(H) X 582(V) Pixels(PAL)
Cell size	6.35um(H) X 7.4um(V)(NTSC), 6.5um(H) X 6.25um(V)(PAL)
Resolution	470TV-LINE
TV type	NTSC, PAL
Sync. System	INTERNAL
Scanning system	2:1INTERLACE
Horizontal Scanning System	15.734KHz(NTSC), 15.625KHz(PAL)
Vertical Scanning System	59.94Hz(NTSC), 50Hz(PAL)
Video Output	1.0Vp-p(Sync. Negative)Termination 75ohm
Gamma Characteristic	r = 0.45
Min. Illumination	1 Lux (F#/1.2, f=4mm, VIDEO LEVEL 40 IRE)
S/N Ratio	45dB or More(AGC OFF)
Lens mount	Fixed focal lens, Vari-focal Auto Iris Lens(4~9mm)
Digital Zoom	x1, x2, x3
AGC	ON / OFF
BLC	ON / OFF
Flickerless	ON / OFF
Electronic Shutter	1/60 ~ 1/100,000 second(NTSC), 1/50 ~ 1/100,000 second(PAL)
Power source	DC12V
Consumption current	Max. 500mA(at DC 12V)
Operation temp	-10°~ 50°C
Preservation temp	-20°~ 60°C

SK-D106/M400X(AI), SK-D106/M400S(AI)

Mode No	SK-D106/M400X(AI)	SK-D106/M400S(AI)
Type	Digital zoom Day & Night PT dome camera	
Image sensor	1/3"COLOR SONY EXview HAD CCD	1/3" COLOR SONY SUPER HAD CCD
Effective pixel	768(H) X 494(V) Pixels(NTSC), 752(H) X 582(V) Pixels(PAL)	
Cell size	6.35um(H) X 7.4um(V)(NTSC), 6.5um(H) X 6.25um(V)(PAL)	
Resolution	COLOR : 470TV-LINE , B/W : 520TV-LINE	
TV type	NTSC, PAL	
Sync.System	INTERNAL	
Scanning system	2:1INTERLACE	
Video Output	1.0Vp-p(Sync.Negative)Termination 75ohm	
Gamma Characteristic	r= 0.45	
Min.Illumination	0.01Lux	0.05Lux
S/N Ratio	45dB or More(AGC OFF)	
Lens mount	Fixed focal Lens, Vari-focal Auto Iris Lens(4~9mm)	
AGC	ON / OFF	
BLC	ON / OFF	
FLICKERLESS	ON / OFF	
DAY&NIGHT Filter exchange	AUTO	
Digital Zoom	x1, x2, x3	
Electronic Shutter	1/60 ~ 1/100,000 second(NTSC), 1/50 ~ 1/100,000 second(PAL)	
Power source	DC12V	
Consumption current	Max.500mA(at DC 12V)	
Operation temp	-10°~ 50°C	
Preservation temp	-20°~ 60°C	

SK-D106/M363(AI), SK-D106/M363X(AI)

Mode No	SK-D106/M363(AI)	SK-D106/M363X(AI)
Type	COLOR PT DOME CAMERA	
Image sensor	1/3" COLOR SONY SUPER HAD CCD	1/3"COLOR SONY EXview HAD CCD
Effective pixel	768(H) X 494(V) Pixels(NTSC), 752(H) X 582(V) Pixels(PAL)	
Cell size	6.35um(H) X 7.4um(V)(NTSC), 6.5um(H) X 6.25um(V)(PAL)	
Resolution	480TV-LINE	
TV type	NTSC, PAL	
Sync.System	INTERNAL	
Scanning system	2:1INTERLACE	
Horizontal Scanning System	15.734KHz(NTSC), 15.625KHz(PAL)	
Vertical Scanning System	59.94Hz(NTSC), 50Hz(PAL)	
Video Output	1.0Vp-p(Sync.Negative)Termination 75ohm	
Gamma Characteristic	r= 0.45	
Min.Illumination	0.5 Lux	0.01 Lux
S/N Ratio	45dB or More(AGC OFF)	
Lens mount	Fixed focal Lens, Vari-focal Auto Iris Lens(4~9mm)	
Gain Control	Auto	
Electronic Shutter	1/60 ~ 1/100,000 second(NTSC), 1/50 ~ 1/100,000 second(PAL)	
Power source	DC12V	
Consumption current	Max.500mA(at DC 12V)	
Operation temp	-10°~ 50°C	
Preservation temp	-20°~ 60°C	

SK-D106/M410(AI), SK-D106/M410X(AI)

Mode No	SK-D106/M410(AI)	SK-D106/M410X(AI)
Type	Advanced High Res. Color PT dome camera	
Image sensor	1/3" COLOR SONY SUPER HAD CCD	1/3"COLOR SONY EXview HAD CCD
Effective pixel	768(H) X 494(V) Pixels(NTSC), 752(H) X 582(V) Pixels(PAL)	
Cell size	6.35um(H) X 7.4um(V)(NTSC), 6.5um(H) X 6.25um(V)(PAL)	
Resolution	520TV-LINE	
TV type	NTSC, PAL	
Sync.System	INTERNAL	
Scanning system	2:1INTERLACE	
Video Output	1.0Vp-p(Sync.Negative)Termination 75ohm	
Gamma Characteristic	r = 0.45	
Min.Illumination	0.5 Lux	0.01 Lux
S/N Ratio	45dB or More(AGC OFF)	
Lens mount	Fixed focal Lens, Vari-focal Auto Iris Lens(4~9mm)	
Anti color rolling	Built-in(NTSC)	
White Balance	ATW	
AGC	Normal(High-option)	
BLC	ON / OFF(Selectable-option)	
FLICKERLESS	OFF(ON-option)	
MIRROR	OFF(ON-option)	
White spots compensation	Autmatic	
Electronic Shutter	1/60 ~ 1/100,000 second(NTSC), 1/50 ~ 1/100,000 second(PAL)	
Power source	DC12V	
Consumption current	Max.500mA(at DC 12V)	
Operation temp	-10°~ 50°C	
Preservation temp	-20°~ 60°C	

SK-D106/M503(AI)

Mode No	SK-D106/M503(AI)
Type	COLOR PT DOME CAMERA
Image sensor	1/3"SONY COLOR SUPER HAD CCD
Effective pixel	510(H) X 492(V) Pixels(NTSC),500(H) X 582(V) Pixels(PAL)
Cell size	9.6um(H) X 7.5um(V)(NTSC),9.8um(H) X 6.3um(V)(PAL)
Resolution	380TV-LINE
TV type	NTSC, PAL
Sync.System	INTERNAL
Scanning system	2:1INTERLACE
Horizontal Scanning System	15.734KHz(NTSC), 15.625KHz(PAL)
Vertical Scanning System	59.94Hz(NTSC), 50Hz(PAL)
Video Output	1.0Vp-p(Sync.Negative)Termination 75ohm
Gamma Characteristic	r = 0.45
Min.Illumination	0.1 Lux
S/N Ratio	45dB or More(AGC OFF)
Lens mount	Fixed focal Lens,Vari-focal Auto Iris Lens(4~9mm)
Gain Control	Auto
Electronic Shutter	1/60 ~ 1/100,000 second(NTSC),1/50 ~ 1/100,000 second(PAL)
Power source	DC12V
Consumption current	Max.500mA(1.8W)(at DC 12V)
Operation temp	-10°~ 50°C
Preservation temp	-20°~ 60°C

SK-D106/1004

Mode No	SK-D106/1004
Type	B/W PT DOME CAMERA
Image sensor	1/3" B/W SONY SUPER HAD CCD
Effective pixel	510(H) X 492(V) Pixels(EIA),500(H) X 582(V) Pixels(CCIR)
Cell size	9.6um(H) X 7.5um(V)(EIA),9.8um(H) X 6.3um(V)(CCIR)
Resolution	400TV-LINE
TV type	EIA,CCIR
Sync.System	INTERNAL
Scanning system	2:1INTERLACE
Horizontal Scanning System	15.734KHz(EIA), 15.625KHz(CCIR)
Vertical Scanning System	59.94Hz(EIA), 50Hz(CCIR)
Video Output	1.0Vp-p(Sync.Negative)Termination 75ohm
Gamma Characteristic	r = 0.45
Min.Illumination	0.05 Lux
S/N Ratio	45dB or More(AGC OFF)
Lens mount	Fixed focal lens
Gain Control	Auto
Electronic Shutter	1/60 ~ 1/100,000 second(EIA),1/50 ~ 1/100,000 second(CCIR)
Power source	DC12V
Consumption current	Max.500mA(at DC 12V)
Operation temp	-10°~ 50°C
Preservation temp	-20°~ 60°C

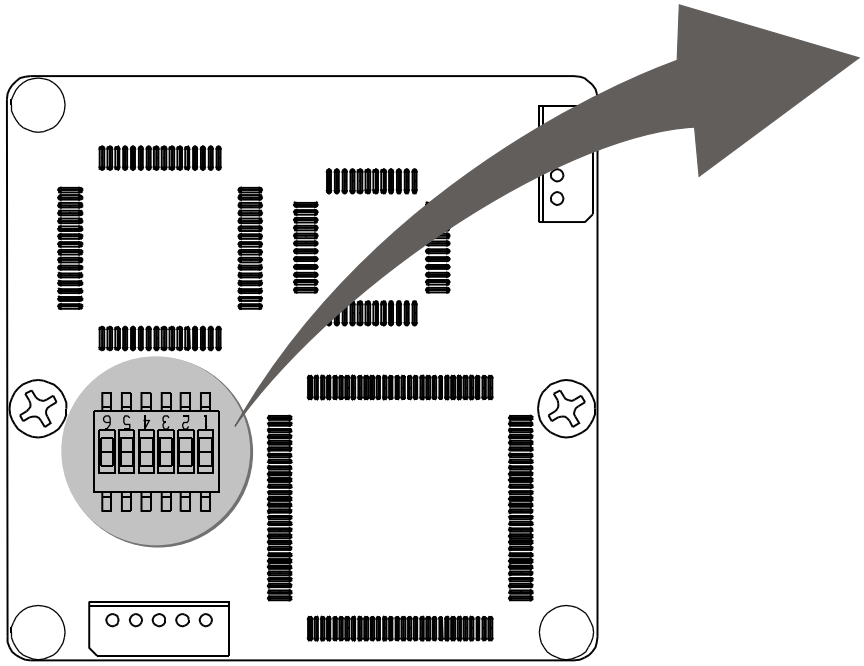
SK-D106/1043(AI)

Mode No	SK-D106/1043(AI)
Type	B/W PT DOME CAMERA
Image sensor	1/3" B/W SONY SUPER HAD CCD
Effective pixel	768(H) X 494(V) Pixels(EIA), 752(H) X 582(V) Pixels(CCIR)
Cell size	6.35um(H) X 7.4um(V)(EIA), 6.5um(H) X 6.25um(V)(CCIR)
Resolution	570TV-LINE
TV type	EIA, CCIR
Sync.System	INTERNAL
Scanning system	2:1INTERLACE
Horizontal Scanning System	15.734KHz(EIA), 15.625KHz(CCIR)
Vertical Scanning System	59.94Hz(EIA), 50Hz(CCIR)
Video Output	1.0Vp-p(Sync.Negative)Termination 75ohm
Gamma Characteristic	r = 0.45
Min.Illumination	0.09 Lux
S/N Ratio	45dB or More(AGC OFF)
Lens mount	Fixed focal lens, Vari-focal Auto Iris Lens(4mm~9mm)
Gain Control	Auto
Electronic Shutter	1/60 ~ 1/100,000 second(EIA), 1/50 ~ 1/100,000 second(CCIR)
Power source	DC12V
Consumption current	Max.500mA(at DC 12V)
Operation temp	-10°~ 50°C
Preservation temp	-20°~ 60°C

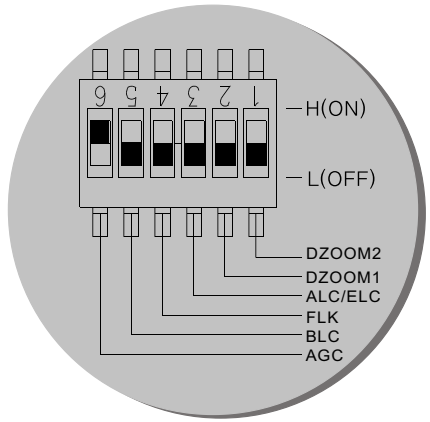
SETUP FOR CAMERA FUNCTIONS

(SK-D106/M290(AI), SK-D106/M400X(AI), SK-D106/M400S(AI) only)

- Function setting combination



- Dip switch combination



	H(ON)	L(OFF)
AGC	AGC ON	AGC OFF
BLC	BLC ON	BLC OFF
FLK	Flickerless ON	Flickerless OFF
ALC/ELC	ALC	ELC

*ALC : Auto IRIS Lens(DC type)

*ELC : Board Lens

[Digital zoom setting]

	x1	x2	x3
DZOOM1	L(H)	L	H
DZOOM2	L(H)	H	L

*Digital zoom setting for default value

– After setting above combination, turn off and on.

WARRANTY CARD

PRODUCT NAME		
MODEL NAME		
DATE OF PURCHASE		
TERM OF THE GUARANTEE		
CUSTOMER	NAME	
	ADDRESS	

*This product will be under warranty for one year after the date of purchase.

The history of after-sale service

YEAR	PROBLEM	PERSON IN CHARGE

MEMO

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